CLAIMS

1. A conveyor comprising:
- a chain of carts for carrying items,
- a track along which the chain of carts may be driven,
- a propulsion system for providing a driving force to the chain of carts for moving the carts along the track,

the propulsion system comprising:
- at least one stationary stator comprising a coil assembly, whereby a first magnetic field may be generated by the coil assembly when electrical power is applied to the coil assembly,
- at least one reaction element mounted on the chain of carts, the reaction element comprising a plurality of permanent magnets mounted on a ferromagnetic carrier plate, the permanent magnets thereby providing at least one second magnetic field, and
- a controller for controlling a supply of electrical power applied to the coil assembly such that the first and second magnetic fields interact to provide the driving force.

2. A conveyor according to claim 1, wherein a gap between the stator and the reaction element is at most 5 mm at a position of the reaction element where it is in its closest position with respect to the stator.

3. A conveyor according to claim 2 wherein, the gap between the stator and the reaction element is between 1.2 and 4 mm at the position of the reaction element where it is in its closest position with respect to the stator.

4. A conveyor according to claim 1, wherein the conveyor is arranged to convey and sort items.

5. A conveyor according to claim 1, wherein the chain of carts is an endless chain.

6. A conveyor according to claim 1, wherein the at least one reaction element comprises a number of reaction elements equal to the number of carts in the chain, whereby each cart is provided with one such reaction element.

7. A conveyor according to claim 1 and comprising a plurality of stators arranged at intervals along the track.

8. A conveyor according to claim 7 wherein the plurality of stators is arranged substantially equidistantly along the track.

9. A conveyor according to claim 1, wherein the controller is operable to control a speed of the chain of carts by controlling a frequency of a voltage applied to the coil assembly.

10. A conveyor according to claim 1, wherein the controller comprises a control system for controlling the operation of the propulsion system, the control system comprising a variable frequency inverter for controlling the electrical power applied to the coil assembly.

11. A conveyor according to claim 10, wherein the control system is comprised in an industrial network.

12. A conveyor according to claim 1, wherein the controller further comprises an encoder for determining a position of at least one cart of the chain of carts, and the controller is operable to control the electrical power applied to the coil assembly in response to the determined position.

13. A conveyor according to claim 1, wherein the controller further comprises an encoder for determining a speed of at least one cart of the chain of carts, and the controller is operable to control the electrical power applied to the coil assembly in response to the determined speed.

14. A conveyor according to claim 13, wherein the encoder is mounted in a magnetically shielded housing.

15. A conveyor according to claim 13, wherein the at least one stationary stator comprises at least two drive elements each having a coil assembly and the encoder is mounted between two adjacent drive elements.

16. A conveyor according to claim 1, wherein each stator of the propulsion system is capable of providing a driving force of at least 350 N.

17. A conveyor according to claim 1, wherein a magnetic flux induced by the propulsion system is at most 0.8 kA/m in a distance of 0.2 m from the stator and the at least one reaction element.

18. A conveyor according to claim 1, wherein at least one cart of the chain of carts comprises magnetical shielding material.

19. A parcel sorting system comprising a conveyor according to claim 1.

20. A baggage sorting system comprising a conveyor according claim 1.

21. A method of providing a driving force to a conveyor comprising:
- a chain of carts for carrying items,
- a track along which the chain of carts may be driven,
- a propulsion system for providing a driving force to the chain of carts for moving the carts along the track, the propulsion system having at least one stationary stator and at least one reaction element mounted on the chain of carts, the reaction element comprising a plurality of permanent magnets mounted on a ferromagnetic carrier plate thereby generating at least one reaction magnetic field,

the method comprising:
- generating a first magnetic field in a coil assembly of the at least one stationary stator by applying electrical power to the coil assembly, and
- controlling the supply of electrical power applied to the coil assembly such that the first magnetic field and the at least one reaction magnetic field interact to provide the driving force.

22. A method according to claim 21, wherein the step of controlling the supply of electrical power comprises controlling a speed of the chain of carts by controlling a frequency of a voltage applied to the coil assembly.

23. A method according to any of the claims 21 further comprising the step of determining a position of at least one cart of the chain of carts, and wherein the control of the supply of electrical power is in response to the determined position.

24. A method according to any of the claims 21 further comprising the step of determining a speed of at least one cart of the chain of carts, and wherein the control of the supply of electrical power is in response to the determined speed.

25. A cart for a conveyor according to claim 1, the conveyor having a propulsion system, the cart comprising:
- a frame structure,
- at least one magnetic reaction element comprising a plurality of permanent magnets mounted at intervals on a ferromagnetic carrier plate,
- a protective cover of a non-magnetic material covering the permanent magnets for protection against mechanical impact.

26. A cart according to claim 25 wherein the plurality of permanent magnets is mounted substantially equidistantly.

27. A cart according to claim 25, wherein the protective cover comprises a plastic coating.

28. A cart according to claim 27, wherein the protective cover is integral with a plastic filling which fills the intervals between the magnets.

29. A cart according to claim 28, wherein the protective cover and the plastic filling are integral with at least one plastic element for fastening the carrier plate to the frame structure.

30. A cart according to claim 28, wherein each magnet is covered by a separate coating.

31. A cart according to claim 25, further comprising a fastening element for fastening the carrier plate to the frame structure.

32. A conveyor system comprising a plurality of carts according to claim 25.

33. A method of securing a carrier plate to a frame structure of a cart for a conveyor, the cart comprising:

- at least one magnetic reaction element comprising a plurality of permanent magnets mounted at intervals on a ferromagnetic carrier plate,
- a protective cover of a plastic material covering the permanent magnets for protection against mechanical impact,

the method comprising:

- arranging the carrier plate in a predetermined position with respect to the frame structure,
- providing the plastic material in a liquefied state to the carrier plate such that the plastic material covers the permanent magnets and, once solidified, provides a fastening connection between the carrier plate and the frame structure.